The effect of Conjugated linoleic acid consumption on oxidative stress and matrix metalloproteinases after exhaustive exercise in young men

Abstract

Background and aims: Conjugated linoleic acid (CLA) has helpful effects such as anti-inflammatory and antioxidant and other effects. CLA can be helpful in athletes. Our aim was to investigate the effects of CLA consumption in plasma levels of oxidative stress, inflammatory factors and matrix metaloproteinases in young men after exhaustive exercise.

Materials and methods: In current experimental study, 29 healthy men have randomly divided in two groups including supplement (n=13) and control (n=16) group. Supplement group received 5.6 gr of CLA daily and control group received the same amount of oral paraffin for 14 days. Blood samples were taken before and after intervention and exercise, and finally the variables were analysis. Descriptive and nonparametric (kolmogrov smirnov) statistical analysis and Independent and Paired Samples T Test has been done and $p \leq 0.05$ was considered significant.

Results: Our results showed that in supplement group, after consumption of CLA, plasma levels of SOD (Superoxide dismutase), GPX (Glutathion peroxidase), TAC (Total antioxidant) increased, but the level of MDA (Malondealdehyde), TNF-α (Tumor necrosis factor-α) and MMP-2 (Matrix Metalloproteinase-2) decreased significantly. The differences of IL-6 (Interlukin-6), hs-CRP (high sensitive C - reactive protein) and MMP-9 (Matrix Metalloproteinase-9) weren't significant. The levels of GPX, SOD and TAC increased in supplement group after exercise in comparison with control, but level of MDA, MMP-2, hs-CRP and TNF-α decreased significantly. The amount of IL-6 and MMP-9 didn't change.

Conclusion: Our results showed that CLA supplement can enhance the antioxidant capacity of body due to increase the antioxidant enzymes activity and decrease of lipid peroxidation, Finally CLA decrease inflammatory factors.

Keywords: Conjugated linoleic acid, Exhaustive exercise, Matrix metaloproteinases, Oxidative Stress